Remarks

Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 43-81 are pending in the application, with claims 43, 55, and 69 being the independent claims. Claims 43, 55, and 69 are sought to be amended. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Rejections under 35 U.S.C. § 101

Paragraph 4 of the Office Action rejects claims 43-81 under 35 U.S.C. § 101 as being non-statutory subject matter. (*See* Office Action, 08/09/07, p. 2.) Applicants respectfully traverse.

For claims to be eligible for patent protection, the claim must be for a practical application of the abstract idea, law of nature, or natural phenomenon. (*See* MPEP 2106, Section IV(C)(2).) A claimed invention is directed to a practical application when it: (1) "transforms" an article or physical object to a different state or thing; or, (2) otherwise produces a useful, concrete and tangible result. (*See id.*) Applicants respectfully assert that claims 43-81 are directed to a practical application since a physical transformation is performed by the processor recited in claims 43-81. In the alternative, Applicants also

respectfully assert that claims 43-81 are directed to a physical application since the processor generates a useful, concrete, and tangible result.

Claims 43-81 meet the physical transformation requirement. These claims recite a structure for increasing multiplication efficiency. The arithmetic multiplier and the binary polynomial multiplier each receive electrical signals, in the form of digital information, and process the electrical information into a result at an output (also in the form of digital information). (*See* claims 43-81.) The carry propagation adder selectively receives the output of the arithmetic multiplier and the output of the binary polynomial multiplier and processes the signals into an output signal stored in a register. (*Id.*) Therefore, the electrical signals at the inputs of the arithmetic multiplier and the binary polynomial multiplier are transformed from one state to another and stored in a register at the output of the carry propagation adder. (*See Arrhythmia Research Technology, Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1059 (Fed. Cir. 1992) (explaining the transformation of electrical signals from one form into another is a physical process).)

Claims 43-81 also meet the useful, concrete, and tangible result requirement. First, one useful application of an embodiment recited in claims 43-81 is to enhance the performance of elliptic curve cryptosystems. (*See* Detailed Description, p.3, lines 24-26.) It is desirable to provide a multiply/divide unit that supports fast polynomial multiplication and various other operations to increase the performance of cryptographic and other systems. (*See* Detailed Description, p. 4, lines 8-10.) Second, claims 43-81 provide a concrete result since the arithmetic and binary polynomial multipliers calculate a repeatable result in the form of digital information. Third, the claims provide a

tangible result since the multiplier structure recited in claims 43-81 generates a product of two operands, the inputs to the multipliers, and stores that result in a register.

Further, the Office Action alleges that claims 43-81 appear "to preempt every substantial practical application of the idea embodied in the claim[s]." (Office Action, 08/09/07, para. 4, p. 2.) Claims 43-81 recite a processor for performing multiplication, where the processor may be used to perform either an arithmetic multiplication or a binary polynomial multiplication. (*See* claims 43-81.) Further, the arithmetic and binary polynomial multipliers are coupled to a carry propagation adder that stores an output in a register. (*Id.*) Since the processor recited in claims 43-81 may perform two types of multiplication functions, Applicants are unclear on the idea or algorithm that the Examiner asserts as being preempted. Applicants respectfully request the Examiner to provide clarification on the idea or algorithm allegedly preempted by claims 43-81.

With respect to claims 55-68, the Office Action alleges that these claims are non-statutory since "the medium comprising a processor is embodied in software." (Office Action, 08/09/07, para. 4, p. 3.) Claim 55 recites a "tangible computer-readable storage medium comprising a processor for performing multiplication embodied in software." The storage medium is not embodied in the software; rather, software is embodied in the storage medium. (*Id.*) The tangible computer-readable storage medium, through a processor embodied in software, produces a useful, concrete, and tangible result, as required by 35 U.S.C. § 101. (*See In re Beauregard*, 53 F.3d 1583, 1584 (Fed. Cir. 1995).)

In view of above, Applicants respectfully request the Examiner to reconsider and withdraw the rejections to claims 43-81 under 35 U.S.C. § 101, as set forth in paragraph 4 of the Office Action.

Rejections under 35 U.S.C. § 103

Paragraph 6 of the Office Action rejects claims 43, 50-55, 62-66, 69, and 76-81 under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,480,872 to Choquette in view of U.S. Patent No. 6,397,241 to Glaser et. al. (hereinafter "Glaser"). (*See* Office Action, 08/09/07, p. 3.) Paragraph 7 of the Office Action rejects claims 48-49, 60-61, and 74-75 under 35 U.S.C. § 103(a) as being obvious over Choquette in view of Glaser, as applied to claims 43, 55, and 69 respectively, in further view of U.S. Patent No. 6,711,602 Bhandal et al. (hereinafter "Bhandal"). (*Id.* at 7.) Further, paragraph 8 of the Office Action rejects 67-68 under 35 U.S.C. § 103(a) as being obvious over Choquette in view of Glaser, as applied to claims 43, 55, and 69 respectively, in further view of U.S. Patent No. 6,066,178 to Bair et al. (hereinafter "Bair"). (*Id.* at 8.) Applicants respectfully traverse.

As discussed during the Examiner Interview, Applicants amended independent claims 43, 55, and 69 to overcome Choquette, Glaser, Bhandal, and Bair. (Examiner Interview, 10/09/07.) Applicants respectfully assert that claims 43, 55, and 69, and their respective dependent claims, are patentable over the cited references.

Accordingly, Applicants respectfully request that the Examiner withdraw the rejections based on the cited references and pass claims 43-81.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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